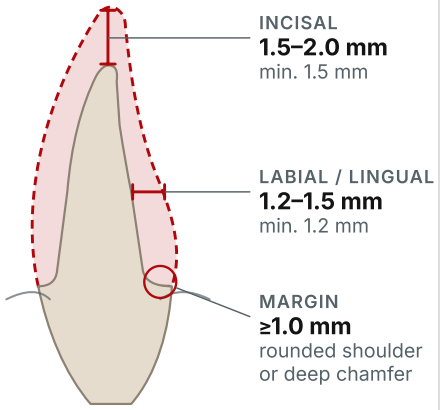
ADVANCED
Dental Laboratory

PREP GUIDE

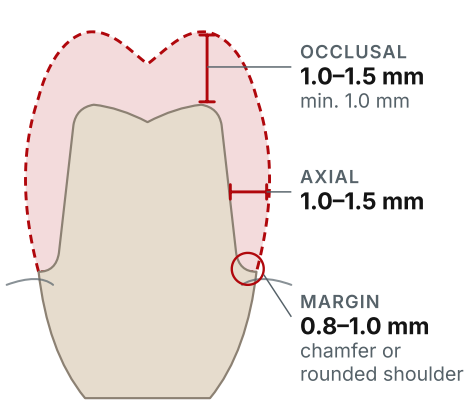
Prep *Guide*

Visual preparation guidelines for zirconia (including Zerapure™), IPS e.max crowns, porcelain and e.max veneers, and inlays & onlays.

1. Zirconia Prep Guide
2. IPS e.max Prep Guide
3. Veneer Prep Guide
4. Inlay & Onlay Prep Guide



IPS e.max anterior crown · schematic



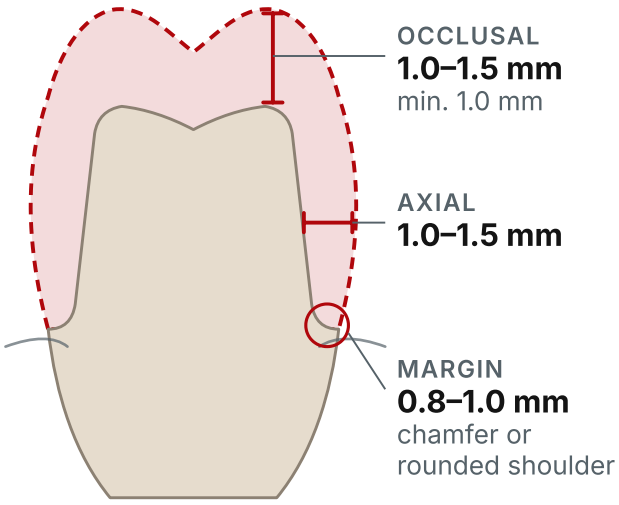
Zirconia posterior crown · schematic

General guidelines based on published manufacturer recommendations; contact Advanced Dental Laboratory for case-specific questions.

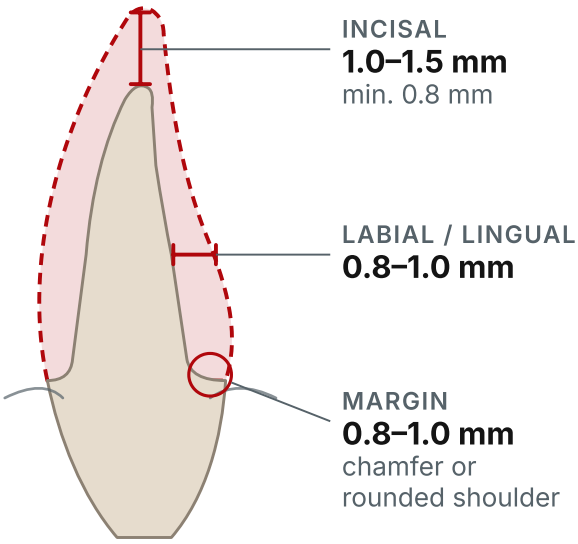
Advanced Dental Laboratory · 274 Madison Ave, Suite 1701, New York, NY 10016
212.889.8812 · info@adlny.com · adlny.com

Zirconia Prep Guide

Monolithic and multilayer zirconia, including Zerapure™. Give the material its minimum thickness, keep every edge rounded and finish on a clear chamfer or rounded shoulder.



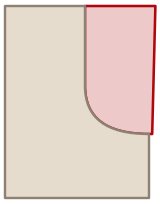
Posterior crown · schematic, not to scale



Anterior crown · schematic, not to scale

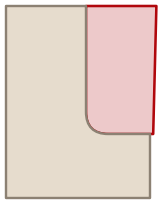
AREA	ANTERIOR	POSTERIOR
Incisal / occlusal reduction	1.0–1.5 mm (min. 0.8 mm)	1.0–1.5 mm (min. 1.0 mm)
Axial reduction	0.8–1.0 mm	1.0–1.5 mm
Margin	Chamfer or rounded shoulder, 0.8–1.0 mm	
Taper	About 4–8° total for conventional or self-adhesive cement	
Prep height	At least 4 mm for conventional cementation	
Edges	Rounded line angles; no sharp edges (edge radius over 0.4 mm)	
Layered zirconia	Add about 1–2 mm for the porcelain layer	
Bridges	No fixed span or connector numbers: design is case-specific. Send the scan for a design review before you prep.	

Margin design



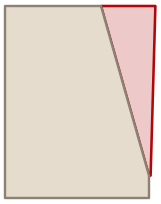
Chamfer

Recommended



Rounded shoulder

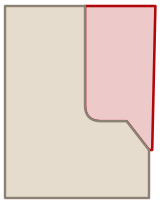
Recommended



Knife-edge / feather

Brand-dependent

Accepted by some high-strength monolithic brands; discouraged by others.

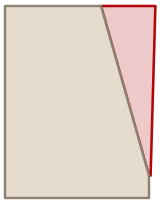


Shoulder-bevel

Not recommended

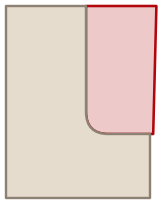
Not in most zirconia makers' designs.

Zerapure™ margins



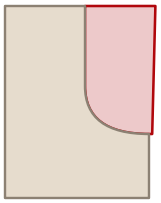
Knife-edge / feather

Suitable for Zerapure™



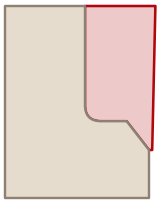
Rounded shoulder

Suitable for Zerapure™



Chamfer

Suitable for Zerapure™

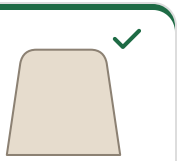


Shoulder-bevel

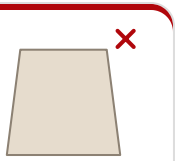
Suitable for Zerapure™

Zerapure™, our multilayered esthetic zirconia, suits knife-edge, shoulder, chamfer or shoulder-bevel preps; its strong cervical layer tolerates non-ideal preps. For reduction, follow the multilayer zirconia figures above.

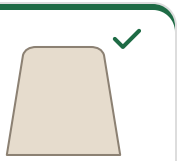
Do & don't



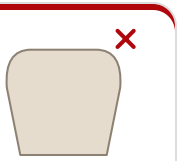
Do Rounded internal line angles



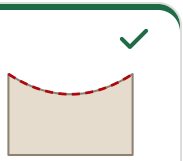
Don't sharp line angles and edges



Do Slight taper, one path of insertion



Don't undercuts or parallel walls



Do Smooth, continuous margin



Don't ragged or ditched margin

Where sources differ

- Minimums depend on the disc. High-strength (3Y) monolithic brands allow as little as 0.5 mm occlusal where space is limited; translucent (4Y/5Y) and multilayer zirconia needs 0.8 mm anterior and 1.0 mm posterior or more.
- Feather or knife-edge margins are accepted by some high-strength monolithic brands, "with caution" by others, and discouraged for translucent zirconia.
- Taper: about 4–8° is the most common recommendation; one maker allows 5–15°.

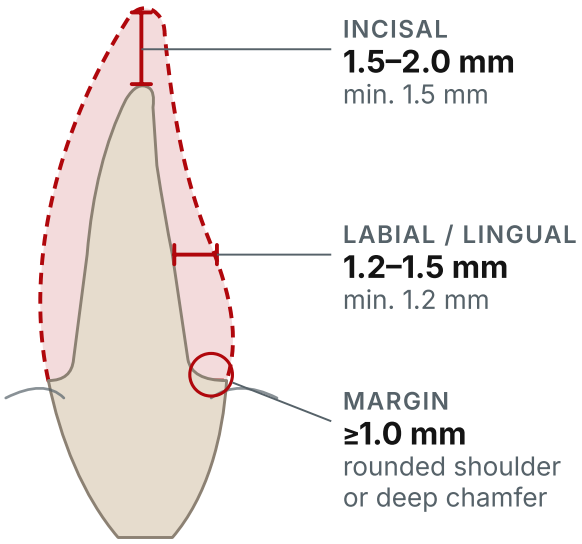
Based on: Ivoclar IPS e.max ZirCAD (Prime, MO/MT), Kuraray Noritake KATANA, 3M Lava Plus, Glidewell BruxZir.

General guidelines based on published manufacturer recommendations; contact Advanced Dental Laboratory for case-specific questions.

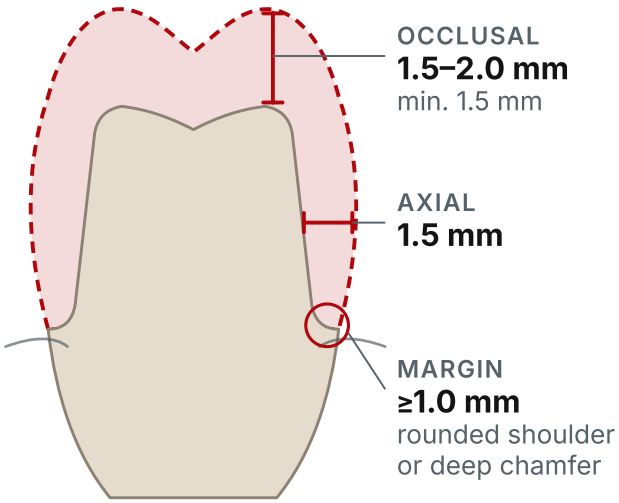
Questions before you prep? Send the scan for a design review: info@adlny.com · 212.889.8812 · adlny.com/send-a-case/

IPS e.max Prep Guide

IPS e.max (lithium disilicate) needs more room than zirconia. Reduce evenly, follow the anatomy, round every edge and finish on a rounded shoulder or deep chamfer.



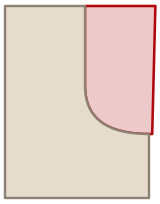
Anterior crown · schematic, not to scale



Posterior crown · schematic, not to scale

AREA	ANTERIOR	POSTERIOR
Incisal / occlusal reduction	1.5–2.0 mm (min. 1.5 mm)	1.5–2.0 mm (min. 1.5 mm)
Labial / lingual / axial	1.2–1.5 mm (min. 1.2 mm)	1.5 mm
Margin	Rounded shoulder or deep chamfer, at least 1.0 mm wide, angled 10–30°	
Taper	About 4–8° for conventional cementation	
Edges	No angles or sharp edges; rounded internal line angles	
Cementation	Minimally invasive crowns (1.0 mm) need adhesive cementation. Conventional or self-adhesive cement needs a retentive prep.	
Bridges	No fixed span or connector numbers: design is case-specific. Send the scan for a design review before you prep.	

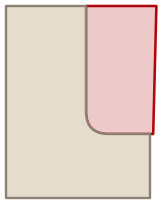
Margin design



Chamfer

Recommended

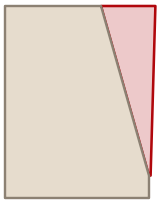
Deep chamfer, ≥1.0 mm.



Rounded shoulder

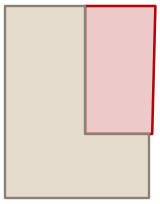
Recommended

Rounded inner edge, ≥1.0 mm.



Knife-edge / feather

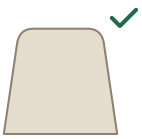
Not recommended



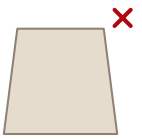
Sharp 90° shoulder

Not recommended

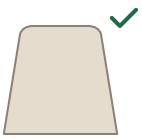
Do & don't



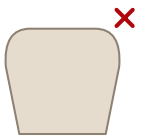
Do Rounded internal line angles



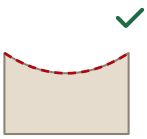
Don't sharp line angles and edges



Do Slight taper, one path of insertion



Don't undercuts or parallel walls



Do Smooth, continuous margin



Don't ragged or ditched margin

Where sources differ

- Ivoclar's documents differ slightly: an older chairside guide lists 1.0–1.5 mm facial reduction and a newer one 1.2 mm posterior axial. We show the larger figures.
- Feather-edge margins and bevels are not among Ivoclar's recommended designs for e.max crowns.

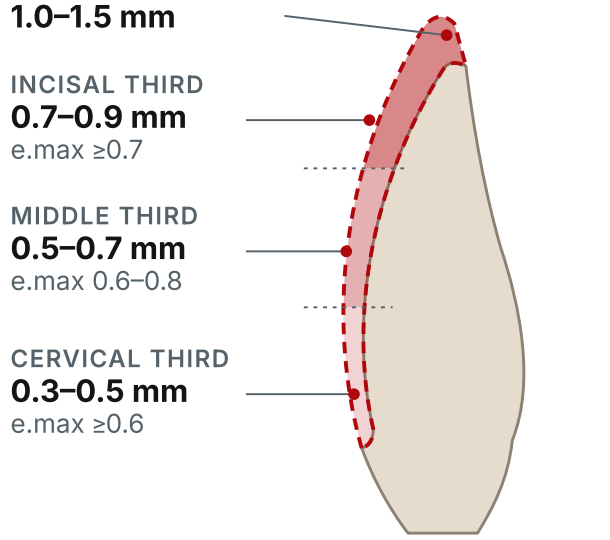
Based on: Ivoclar IPS e.max CAD instructions for use (labside and chairside), Ivoclar chairside preparation guides for IPS e.max.

General guidelines based on published manufacturer recommendations; contact Advanced Dental Laboratory for case-specific questions.

Questions before you prep? Send the scan for a design review: info@adlny.com · 212.889.8812 · adlny.com/send-a-case/

Veneer Prep Guide

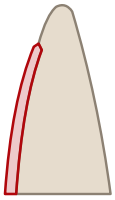
Let the final result drive the reduction: prep through a wax-up or mock-up, stay in enamel wherever you can and reduce more toward the incisal edge, where enamel is thickest.



Facial reduction by zone · schematic, not to scale

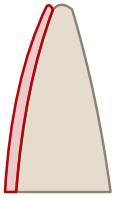
ZONE	FELDSPATHIC (MINIMAL)	IPS E.MAX PRESS
Cervical third	0.3–0.5 mm	At least 0.6 mm
Middle third	0.5–0.7 mm	0.6–0.8 mm
Incisal third	0.7–0.9 mm	At least 0.7 mm
Incisal edge, if covered	1.0–1.5 mm; about 1.5 mm for incisal effects	
Margin	Light chamfer, in enamel wherever possible	
Incisal margins	Away from static and dynamic contacts	
Start from	A diagnostic wax-up or mock-up; prep through it with depth cuts	

Incisal design options



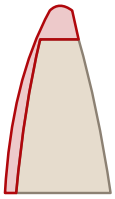
Window

No incisal coverage; the most conservative design.



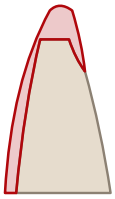
Feather

Veneer runs to the incisal edge; the edge is not reduced.



Butt joint

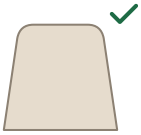
Flat incisal reduction; often preferred for worn or fractured teeth.



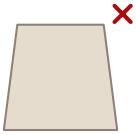
Incisal overlap

Reduction wraps to a palatal chamfer; often preferred for healthy teeth with enough thickness.

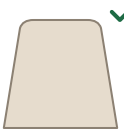
Do & don't



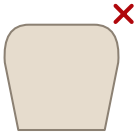
Do Rounded internal line angles



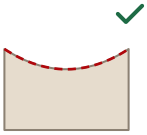
Don't sharp line angles and edges



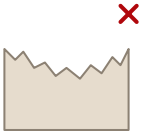
Do Slight taper, one path of insertion



Don't undercuts or parallel walls



Do Smooth, continuous margin



Don't ragged or ditched margin

Where sources differ

- Average labial enamel is only about 0.3–0.5 mm thick at the gingival third, which is why cervical reduction is the thinnest.
- Bigger shade changes need more room: one widely used protocol goes to 0.5 / 0.7 / 0.9 mm for one to two shades and 0.8 / 1.0 / 1.2 mm for two to three.
- Ivoclar lists 0.4 mm cervical and 0.5 mm incisal for its thin e.max veneers.
- Zone values come from clinical literature and Ivoclar's e.max minimums rather than a single manufacturer document.

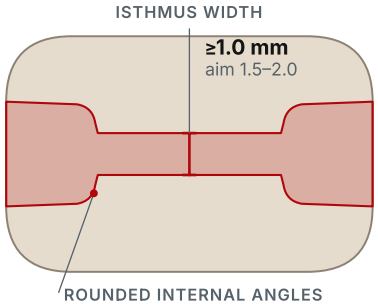
Based on: Ivoclar IPS e.max instructions for use and chairside guides; Winter (Inside Dentistry, 2013); Sisler (J Cosmetic Dent, AACD); Magne & Magne; reviews of veneer incisal designs.

General guidelines based on published manufacturer recommendations; contact Advanced Dental Laboratory for case-specific questions.

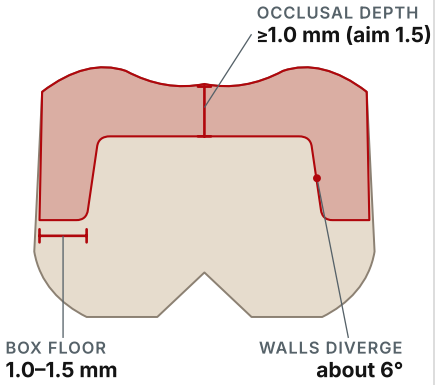
Questions before you prep? Send the scan for a design review: info@adlny.com · 212.889.8812 · adlny.com/send-a-case/

Inlay & Onlay Prep Guide

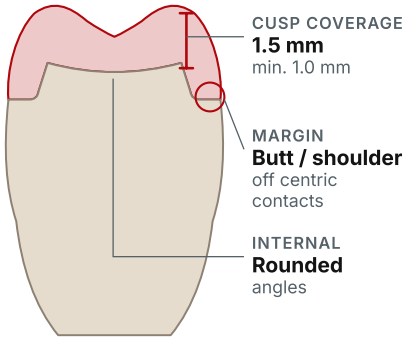
Values for IPS e.max all-ceramic inlays and onlays. Give the ceramic enough depth and width, flare the walls slightly and keep every internal angle rounded.



Inlay outline, occlusal view · schematic, not to scale



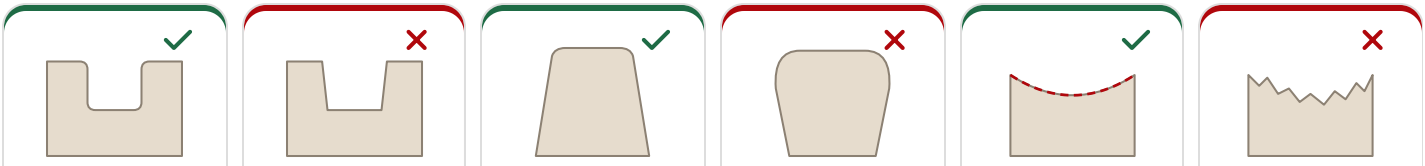
Inlay, mesiodistal section · schematic, not to scale



Onlay cusp coverage · schematic, not to scale

AREA	INLAY	ONLAY
Occlusal depth	At least 1.0 mm (aim 1.5 mm)	
Isthmus width	At least 1.0 mm (aim 1.5–2.0 mm)	—
Proximal box floor	1.0–1.5 mm wide	
Cusp coverage	—	1.5 mm (min. 1.0 mm)
Walls	Slightly divergent, about 6°; 100–120° between the proximal walls and the restoration's proximal surfaces	
Internal angles	Rounded	
Margins	Butt or shoulder; no slice-cuts or feather edges; keep margins off centric contacts	

Do & don't



Do Rounded internal angles, butt margins

Don't sharp internal angles

Do Slight taper, one path of insertion

Don't undercuts or parallel walls

Do Smooth, continuous margin

Don't ragged or ditched margin

Where sources differ

- Ivoclar's current e.max instructions give 1.0 mm minimum depth and isthmus; its older chairside guide recommends 1.5 mm depth and a 1.5–2.0 mm isthmus. Aim for the larger figures where the tooth allows.
- Cusp coverage: Ivoclar lists at least 1.0 mm in one document and 1.5 mm in another.
- These values are for IPS e.max. For our nano-zirconia reinforced resin option, ask us before you prep.

Based on: Ivoclar IPS e.max CAD instructions for use; Ivoclar chairside preparation guides for IPS e.max (2009, 2016).

> **General guidelines based on published manufacturer recommendations; contact Advanced Dental Laboratory for case-specific questions.**

Questions before you prep? Send the scan for a design review: info@adlny.com · 212.889.8812 · adlny.com/send-a-case/